

03-350 Removal and installation of crankshaft sprocket

Tightening torques	Nm	(kpm)
Bolt M 18 x 1.5 x 45 to crankshaft	270–330	(27–33)
Bolts for cylinder head cover (engine 615)	5	(0.5)
Nuts for cylinder head cover (engines 615, 616, 617)	15	(1.5)
Drain plug, radiator (type 115)	6–10	(0.6–1)

Special tools

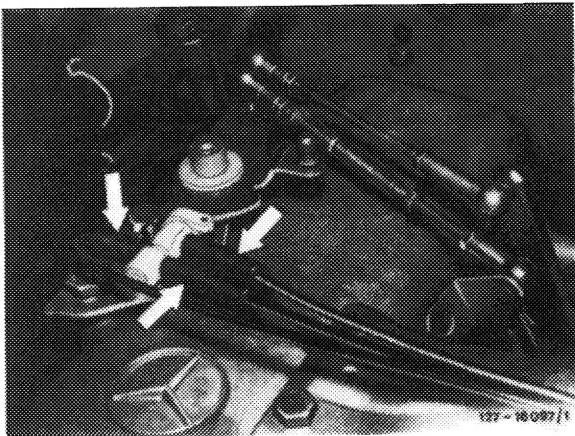
Torque wrench, 3/4" drive 150–500 Nm (15–50 kpm)		001 589 31 21 00
Socket 27 mm		001 589 65 09 00
Supporting lock		110 589 00 40 00
Puller for balance plate		116 589 10 33 00
Puller for spacing ring		616 589 00 33 00
Puller for crankshaft sprocket		615 589 01 33 00
Installer for radial seal		130 589 00 61 00

Commercially available tool

Adapter, 3/4" female to 1/2" male drive	e.g. Hazet, 5630 Remscheid order No. 1058 R-1
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Removal

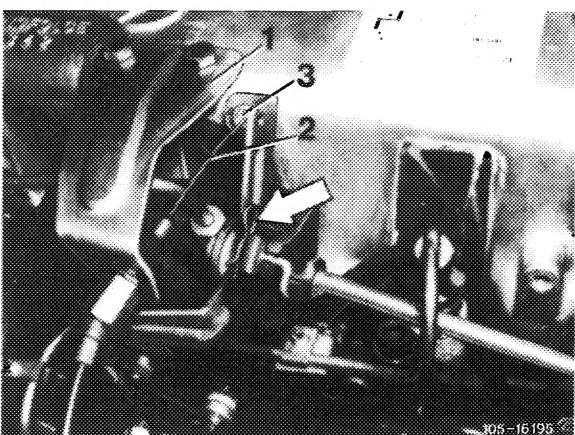
- 1 Remove radiator and fan.
- 2 Remove cylinder head cover.
For models with automatic transmissions and vacuum-controlled modulating pressure, detach vacuum lines at switch-over valve.



Caution:

Be sure not to cross vacuum lines.
The connecting sockets and vacuum lines are color coded.

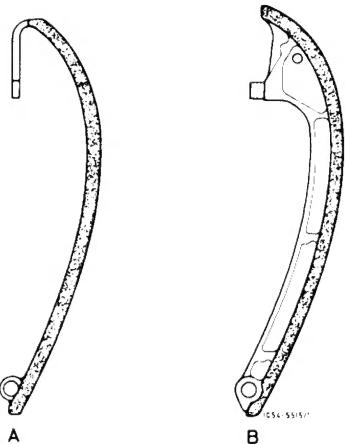
On engines with longitudinal control spindles, unhook all control rods. Withdraw retainer (arrow) and force longitudinal control spindle in aft direction. Unscrew bracket (1) and unclip idle control cable (2) with plastic sleeve (3).



3 On models with air conditioning, detach York refrigeration compressor with bracket and connected lines, depositing on one side.

First remove fan and water pump pulley, additionally removing air cleaner cover on models featuring oil bath air cleaners.

On engine 617.912, remove adapter at air cleaner.



Caution:

On engines with lightweight tension/rail (B) it is not necessary to detach refrigeration compressor.

4 Remove pulley, vibration damper and balance plate (03-340).

19a 15 16 17 18 25 26 28 27 30

5 Remove front radial seal on crankshaft (03-324).

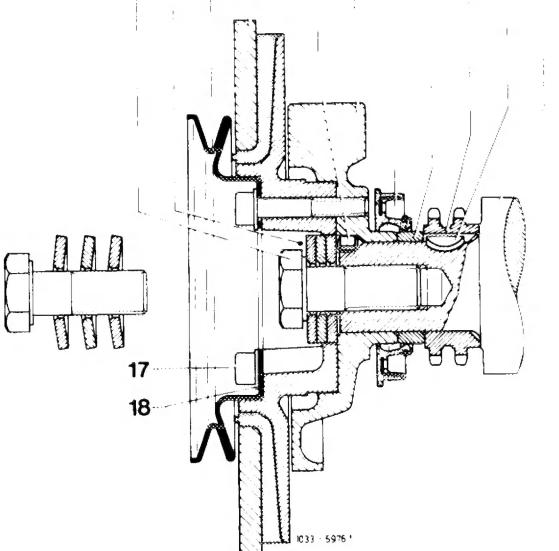
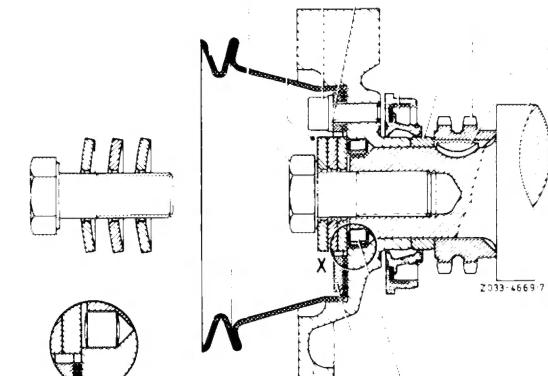
Engines 615, 616

Detail X

24 18a 23

15 16 19a 20 23 24 25 26 28 27 30

Engine 617

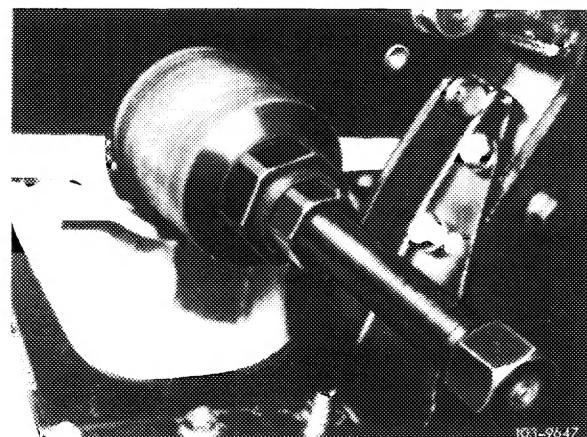


6 Remove spacing ring (26) with puller.

7 Insert bolt (15) with disk springs (16).

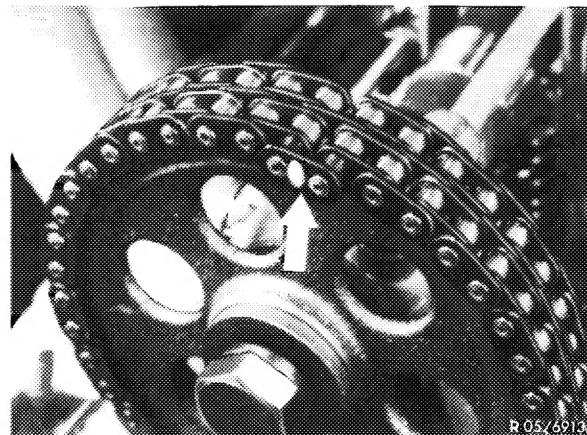
8 On engines with tension rail version A (illustration, job No. 3) remove chain tensioner. On engines with lightweight tension rail B, force back thrust pin of chain tensioner.

9 Remove glow plugs.



10 Cover chain guard with cloth and grind open both chain pins of a timing chain link.

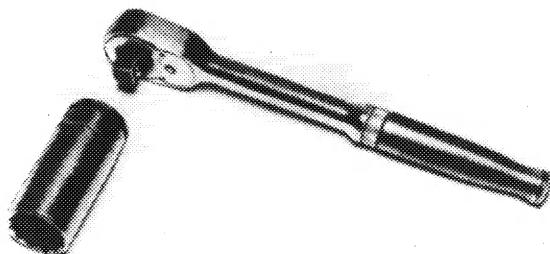
11 Insert open chain link from front (water pump side) and mark with paint.



12 Using tool combination, turn crankshaft until open chain link can be seen through radial seal mounting hole.

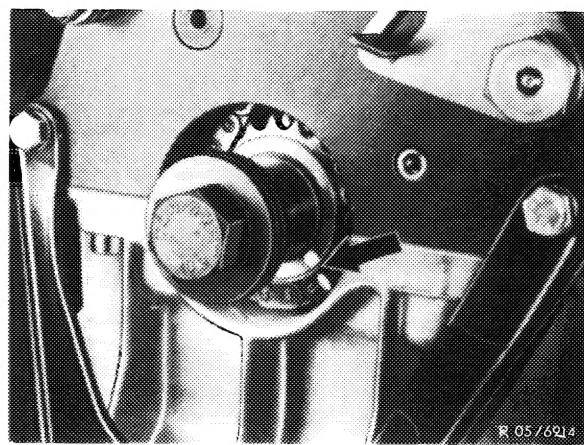
Caution:

Be sure to turn crankshaft in normal working direction only.



13 Apply a dot of paint to crankshaft sprocket adjacent to marked chain link.

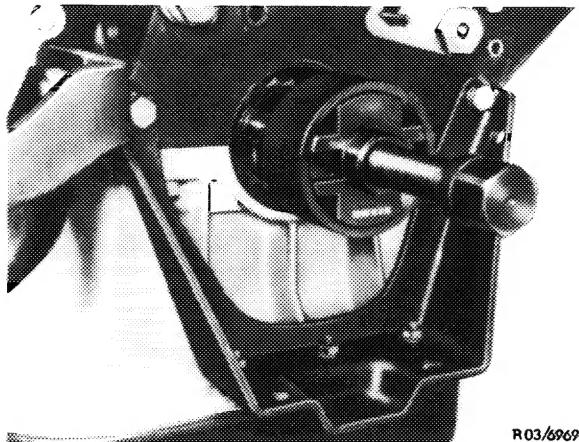
14 Withdraw open chain link and detach chain from crankshaft sprocket. To do so, slightly turn crankshaft so that left chain half (viewing from front) can be dropped off crankshaft sprocket (chain retainer at oil pan).



15 Detach crankshaft sprocket, using puller.

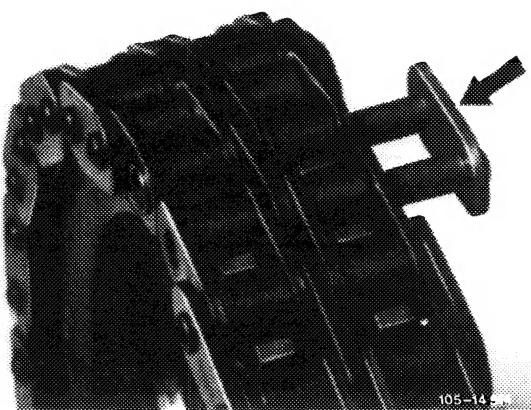
16 Check condition of Woodruff key in crankshaft, replacing if necessary.

Position a piece of cardboard beneath crankshaft so that Woodruff key cannot drop into oil pan.

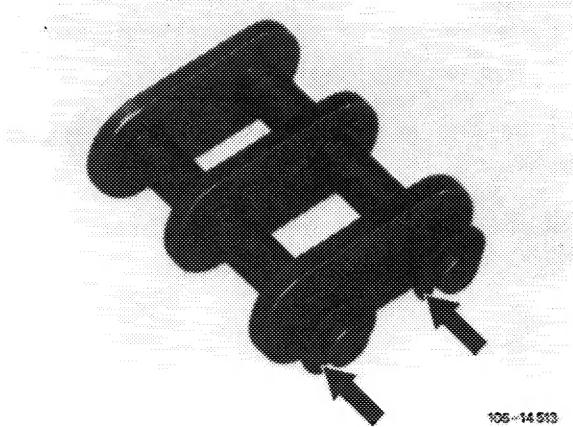


Installation

- 17 If replaced, insert new Woodruff key.
- 18 Transfer color marking from old crankshaft sprocket to new one.
- 19 Heat up crankshaft sprocket on a hot plate (approx. 80 °C) and slip onto crankshaft.
- 20 Using a screwdriver, position right-hand chain half (viewing from front) on sprocket. Be sure to watch out for color marking.
- 21 Force chain onto crankshaft sprocket with aid of screwdriver and slightly turn crankshaft on.
- 22 Position left-hand chain half on crankshaft sprocket.
- 23 Insert open chain link, making sure that all link plates are joined together.
- 24 Turn crankshaft until open chain link reaches camshaft sprocket.
- 25 Remove open chain link and insert bearing pin part from rear so that retaining plates can be seen from front.



26 Press retaining plate home.

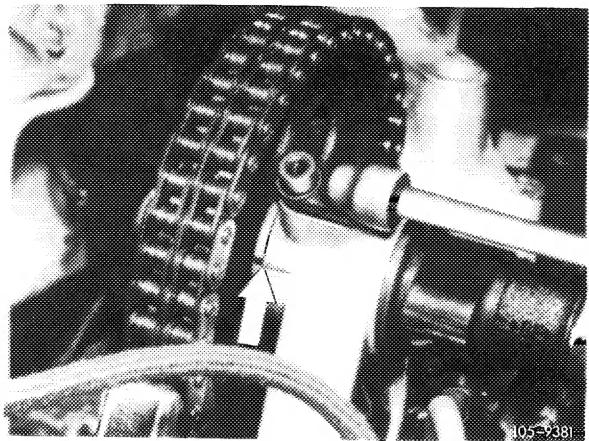


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27 Continue to turn crankshaft and check timing marks at TDC.

28 Drive spacing ring onto crankshaft.

29 Install front radial seal on crankshaft (03-324).



105-9381

30 Install pulley, vibration damper and balance plate (03-340).

31 Now proceed in reverse order to removal.